

WHAT IS CLAIMED IS:

1. A current-mode receiving device for receiving data as a current signal input, the device comprising:

5 a current mirror including a first terminal and a second terminal, wherein the input current signal and a feedback current signal are added at the first terminal; and a current-sense current signal having a current magnitude proportional to the sum of the current magnitudes of the input current signal plus the feedback current signal is current-sense from the second terminal; and

10 a feedback unit for decreasing the magnitude of current flowing through the current mirror at the first terminal by a first predetermined amount if the current-sense current signal is at a high level, and for increasing the magnitude of current flowing through the current mirror at the first terminal by a second predetermined amount if the current-sense current signal is at a low level, and for
15 outputting an output voltage of the current-mode receiving device.

2. The device of claim 1, wherein a current-magnitude of a final level of the current-sense current signal of the current-mode receiving device:

is lower than a current-magnitude of a high level of the input

20 current signal if the final level of the output signal is at a high level, and

is higher than a current-magnitude of a low level of the input current signal if the final level of the output signal is at a low level.

3. The device of claim 1, wherein the magnitude of current of the input
25 current signal at its high level is greater than the magnitude of current of the input current signal at its low level

4. The device of claim 1, wherein the feedback current alternatively
sources and sinks the feedback current controlled by the feedback unit, depending
30 on whether the current-sense current signal is at a low level or at a high level.

5. The device of claim 4, wherein the feedback unit: sources feedback current to the first terminal of the current mirror while the current-sense current signal is at a low level; and sinks feedback current from the first terminal of the current mirror while the current-sense current signal is at a high level.

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6. The device of claim 1, wherein the current-sense current signal has a current magnitude approximately equal to the sum of the current magnitudes of the input current signal plus the feedback current.

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7. The device of claim 1, wherein current mirror comprises an operational amplifier.

8. The device of claim 1, wherein feedback unit comprises a Schmitt-Trigger Circuit for triggering an output voltage based upon the magnitude of the current-sense current signal.

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9. The device of claim 1, wherein at least one of the current mirror and the feedback unit comprises bipolar transistors.

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10. A current-mode data receiving device which receives a current signal as an input signal, the device comprising:

a current mirror that includes a first terminal and a second terminal, where the input current signal and a feedback current signal are received at the first terminal and a current-sense current signal is output from the second terminal;

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a feedback unit that uses the current-sense current signal of the current mirror for controlling the feedback current signal to the first terminal, and outputs an output voltage of the current-mode receiving device.

11. The device of claim 10, further comprising a Resistance-Capacitance (RC) unit, that decreases a current magnitude of the input current signal if the current magnitude of the input current signal is greater than a predetermined current maximum amount and increases the current magnitude of the input current signal if the current magnitude of the input signal is less than the predetermined minimum current amount.

12. The device of claim 10, wherein a final magnitude of the current-sense current signal of the current mirror is less than the magnitude of the input current signal at its high level by a first predetermined amount, and final magnitude of the current-sense current signal of the current-mode receiving device is greater than the magnitude of the input current signal at its low level by a second predetermined amount.

13. The device of claim 10, wherein the magnitude of a current passing through the current mirror at the first terminal when the input current signal at its high level is less than the magnitude of the input current signal at its high level.

14. The device of claim 10, wherein the magnitude of a current passing through the current mirror at the first terminal when the input current signal at its low level is greater than the magnitude of the input current signal at its low level.

15. A current-mode receiving device for receiving a current signal as an input current signal, the device comprising:
a current mirror having a first terminal and a second terminal, where the input current signal is received at the first terminal and a current-sense current signal is output through the second terminal;

a current-voltage converter for sensing the magnitude of the current-sense current signal flowing out from the second terminal, and outputting an output voltage signal of the current-mode receiving device having at least two logic voltage levels; and

5 a reverse unit for alternately increasing and decreasing the current magnitude of the current-sense current signal that is output through the second terminal by a predetermined amount, according to the logic voltage level of the voltage signal output from the current-voltage converter.

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16. The device of claim 15, wherein the current-voltage converter outputs the output voltage signal at a high logic voltage level if the magnitude of the current-sense current signal flowing out from the second terminal is at a predetermined low level, and outputs the output voltage signal at a low logic voltage level if the magnitude of the current-sense current signal flowing out from the second terminal is at a predetermined high level.

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17. The device of claim 15, wherein the reverse unit comprises:

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a first P-type transistor for conducting a first current when the output voltage signal from the current-voltage converter is at a low logic voltage level;

a second P-type transistor for supplying a current at a first predetermined level through the first P-type transistor;

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a first N-type transistor for conducting the first current when the output voltage signal of the current-voltage converter is at a high logic voltage level; and

a second N-type transistor operatively connected to the first N-type transistor and that allows a second current at a second predetermined level to flow through the first N-type transistor when the first N-type transistor is conducting ;

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wherein one of the current at a second predetermined level and current at a second predetermined level is a feedback current connected to the first terminal.

18. The device of claim 15, wherein at least one of the first and second P-type transistors is a PMOS transistor, and wherein at least one of the first and second N-type transistors is an NMOS transistor.

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19. The device of claim 15, further comprising a Resistance-Capacitance unit connected in series with the input current signal and operatively connected to the first terminal, for decreasing a the current magnitude of the input current signal if the current magnitude of the input current signal is greater than a first predetermined current magnitude, and increases the current magnitude of the input current signal if the current magnitude of input current signal is less than a second predetermined current magnitude.

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